

Will opportunism go away?

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Abstract

It has been suggested that opportunism will go away because absence of opportunism economizes on transaction costs, and therefore has a better chance of survival in the selection process of markets. But the tension between collective and individual advantage has to be taken into account. If self-interest is the only driving force of conduct, opportunistic conduct goes away only when monitoring for it is perfect and costless, and the penalty for loss of reputation exceeds its reward. Opportunism can go away when institutions immunize agents against the temptations of opportunism. But the problem then is how to protect those institutions against inroads of opportunism from outside. Such entry may arise if one participates in world trade. Then, opportunism still may not go away.

Key words: information problems, opportunism, transaction costs, institutions, evolutionary theory

1 Introduction

In modern theories of economic behavior and organization, a leading role is played by information problems (search costs, asymmetric information, bounded rationality), combined with temptations of opportunism. These yield transaction costs and raise important and interesting issues of organization ('governance').

It is a long-standing argument in economics, going back to the famous 'Friedman debate' (Friedman, 1970), that optimal behavior prevails among firms, not because agents are calculatively competent, but because of the selection pressure of markets, which puts an end to sub-optimal behavior. Such evolutionary arguments go back to Alchian (1950). But Winter (1963) demonstrated that profit maximizing tendencies dominate in the long run only under certain restrictive assumptions. In particular, it is questionable whether the selection mechanism is indeed always so rigorous as to allow only the 'single exit' (Latsis, 1980) of optimal behavior. There may be slack due to lack of competition and contestability of markets. But that is not the issue that will be addressed here.

The evolutionary argument also appears in transaction cost economics (TCE). Williamson (1985) argued that among alternative governance structures (market, 'hierarchy' and forms 'between market and hierarchy') only the optimal one will survive, which minimizes the sum of production, transaction and organization costs under given conditions of technology and institutions. The line of argument was carried further by Hill (1990), who argued that when trust prevails and serves to eliminate the risks of opportunism, this economizes on the cost of governance. Therefore, selection pressures of markets will lead to the elimination of less trustful societies, and opportunism will go away. The hypothesis that trust yields prosperity by a reduction of transaction costs was investigated in a comparative study of different cultures by Fukuyama (1996). A number of authors have argued that in Japan firms economize on governance and enable fruitful relations, particularly in subcontracting, on the basis of more trustful, long term relations (Dore, 1989; Cusumano & Fijimoto, 1991; Helper, 1991; Dyer & Ouchi, 1993), even though

such relations are certainly not universal, and apply only to 'top tier' suppliers (Kamath & Liker, 1994).

What is the basis for trust? Does it go beyond a reputation mechanism? The reputation mechanism is well known as a device that can limit opportunistic conduct, but it is also well known that its operation is subject to conditions of monitoring, and may not be perfect. Williamson (1993) argued that the notion of trust makes sense only if it goes beyond calculative self interest. He considered the possibility of restricting calculation, but 'Just as it is mind-boggling to contemplate hyperrationality of a comprehensive contracting kind, so it is mind-boggling to contemplate the absence of calculativeness' (p. 479). Williamson granted that people may limit their calculativeness in what he called 'nearly non-calculative' trust, either in order to maintain 'atmosphere', or to prevent negative externalities of 'metering .. all petty injuries' (p. 480), or because people may *like* to transact without a too detailed metering of profit and loss (p. 481). But the point, according to Williamson, is that this is calculative self-interest on a higher level: a calculative limitation of calculativeness. Completely non-calculative trust occurs only in 'personal trust', in relationships with friends, family or other loved ones (p. 482).

A minor objection to Williamson's argument is that the radical discontinuity between personal and transactional relations is contrived: personal elements creep into business relations and vice versa: economic interests creep into personal relations. But the main point is that calculative self-interest can be transcended not only by a halt to all calculativeness, as Williamson contemplates, but also by a going beyond self-interest on the basis of emotions or ethics while maintaining some degree of calculativeness. Ethical habits concerning relations (in families, clans or wider groups) are part of culture, and constitute 'social capital' (Fukuyama, 1996), which can provide a basis for trust within the relevant group. This need not imply a complete absence of calculativeness: people may still be tempted by opportunism if the reward is high enough ('golden opportunity'). That is why trust, based on ethics or personal bonds, is seldom blind and recognizes risk: a non-zero subjective probability that it will be breached. Trust based on ethics may also be calculative in

the sense that people understand its value and undertake measures to maintain the social capital involved. But nevertheless, ethical routines are not rules that individuals calculatively design, bargain about and then choose to adopt: they evolve and are adopted by socialization, as part of tacit knowledge. In that sense they are not fully calculative. And there remains tension between morality and self-interest: the temptation of golden opportunities or the pressure of emergencies. For example, as discussed by Fukuyama (1996: 206), the Japanese system of life-time employment (for core staff) in large corporations came under pressure in the economic crisis of the early nineties.

In what sense can we say that trust-enhancing social capital is still a matter of calculative, self-interested rationality, as Williamson suggests? What we have here is rationality in the evolutionary, *ex post* sense: ethical conduct supporting trust is conducive to the growth and survival of the group. But this is an altogether different category from *ex ante* calculativeness on the level of the individual, deliberating whether or not to engage in some transaction.

In the literature on trust (Gambetta 1988), the notion is associated with the subjective probability that one's partner will do one no harm. The following definition of trust is adopted here (Nooteboom, 1996):

The subjective probability that the partner will not utilize opportunities for opportunism, even though it would be to his material (or economic) benefit.

This definition satisfies Williamson's (1993) condition that trust is relevant only if it goes beyond calculative self-interest. Here trust is still calculative to some extent (it is not blind), but it goes beyond self-interest. Trust considers trustworthiness, and may take it for granted when it is confirmed, on the basis of socially inculcated norms of conduct, habitualization or bonds of friend- or kinship¹. However,

¹ For an empirical test of the effect of trust, next to alternative instruments of governance that are based more on self-interest, see Berger, Nooteboom & Noorderhaven (1995) and Nooteboom, Berger & Noorderhaven (1995).

trustworthiness is not unconditional and is subject to temptation by 'golden opportunities'.

The objective of this paper is to investigate rigorously the possibility of eliminating opportunistic conduct. First in the absence of trust, on the basis only of a reputation mechanism, which is analysed by means of a simple tool for analysing n-person games that was introduced by Schelling (1978). It is demonstrated that a reputation mechanism is never perfect, so that opportunism remains, if self-interest is the only driving force of behavior. The reason is that 'metering' of opportunism is never perfect and costless. When trust is introduced, on the basis of social capital, opportunism can go away, but the question then is how robust this outcome is under entry of foreign agents who do not participate in such social capital.

2 Rewards of cooperation

Consider a population of N agents, who transact with each other at random, and of whom n act opportunistically. The question is what the equilibrium level of the percentage of opportunism (n/N) is. Could it be zero? To explore this issue, we set up a model that allows for imperfect and costly monitoring against opportunism, and a penalty on loss of reputation in case opportunism is found out. Monitoring has two functions:

- damage control: if an opportunist is found out, he does not obtain the advantage of opportunism;
- loss of reputation: if an opportunist is found out, he obtains a penalty in the form of loss of reputation.

These two functions could be separated, but to keep the model simple we bring them together. The following model appears to capture the crux of the situation.

$$CR = a - d(1 - m)(n/N) - c; a, d, c > 0; 0 \leq n \leq N; 0 \leq m \leq 1 \quad (1)$$

where: CR = expected returns for someone who cooperates (does not act opportunistically)

n/N = probability (ex ante) of dealing with an opportunistic partner

m = effectiveness of monitoring opportunism (here it yields damage control)

c = cost of monitoring

a = reward from cooperation

d = penalty of having an opportunistic partner = additional reward for that partner, if he is not captured by monitoring

The formula states that for the cooperator there is an expected loss due to opportunistic conduct, which depends on the probability of having an opportunistic partner (n/N) and the effectiveness of monitoring against it (m), which carries a cost (c). Later we will specify the expected returns for opportunistic conduct as a difference with respect to the rewards for cooperation.

We further specify:

$$m = 1 - \exp(-\alpha c); \alpha \geq 0 \quad (2)$$

As illustrated in figure 1, this indicates that 100% reliable monitoring of opportunism is infinitely costly. The parameter α captures the efficiency of money spent on the detection of opportunistic conduct so as to prevent its damage and to impose a reputational penalty.

figure 1 about here

We assume that agents with cooperative intentions choose the optimal level of monitoring (m), of which the costs (c) are shared by all. Agents with opportunistic intentions concur, since otherwise they would reveal their intentions.

Substituting (2) into (1), and seeking the optimal level of monitoring, we find:

$dCR/dc = \alpha \exp(-\alpha c) n/N - 1 = 0$, which yields the following optimal values, indicated with a star (*):

$$c^* = \text{Max} [0, 1/\alpha \{ \ln(n/N) + \ln \alpha d \}] \quad (3)$$

$$m^* = \text{Max} \{0, 1 - N/(n\alpha d)\}$$

$$CR^* = \text{Max} [0, a - 1/\alpha \{ 1 + \ln(n/N) + \ln \alpha + \ln d \}]$$

Expenses on monitoring against opportunism are worthwhile only when the percentage of opportunism (n/N) exceeds a threshold $p^* = 1/(\alpha d)$. When expected return from cooperation becomes negative, no partnership occurs, and returns are zero. The plot of expected returns from cooperation (CR^*) against percentage of opportunism (n/N) depends on the parameters: up to p^* there is no monitoring, so that for $\alpha d < 1$ there is no monitoring up to 100 % opportunism.

3 Rewards of opportunism

We specify the differential gain from opportunism as follows:

$$D = OR - CR = \{d(1 - m) - rm\}(1 - n/N) \quad (4)$$

where: D = differential gain from opportunism

OR = returns for an opportunist

r = penalty for loss of reputation

The formula states that opportunism carries advantages as well as disadvantages, and the balance can become negative. It yields a reward of defection (d) if the partner is cooperative (which carries a probability $1 - n/N$), and if defection is not caught in the monitoring system (with probability $1 - m$). We assume that in case of two opportunistic partners there is no gain for either.

We assume that the penalty for loss of reputation is contingent upon successful monitoring (with probability m), and is further weighted by the proportion of non-opportunistic agents. Concerning the first point, one may argue that the cooperative agent knows when the partner has been opportunistic, since he will then receive less than under full cooperation. But in fact, it may be difficult to know this without a monitoring system. Furthermore, one is likely to need a monitoring system to substantiate an accusation of opportunism and to credibly communicate it to others.

The second point has two alternative interpretations. According to the first one, the probability of being caught depends not only on the intensity of monitoring, but also on the proportion of non-opportunistic agents: opportunistic agents are not inclined to report the defection, since they are themselves engaged in it (when guilty,

do not throw the first stone). On the other hand, cooperative agents report opportunism and pass the word on. According to the second interpretation, the weight of the penalty (r) depends on the number of non-opportunistic agents, since they represent the attractiveness of switching to another partner. If everybody is opportunistic, switching will only lead you from one opportunist to the next. So the more non-opportunistic agents there are, the more the opportunists are likely to be left without partners when they are found out.

In the present model we do not take the trouble of calculating the resulting attrition in the population of potential partners. This might be included in a more sophisticated version of the model².

Substitution of (3) in (4) yields, at the optimal level of monitoring:

$$D^* = r\{p/x + x - (1+p)\} \quad (5)$$

where: $p = (d+r)/(r\alpha d) = 1/(\alpha d) + 1/(\alpha r)$

$$x = n/N$$

(5) implies that:

$$D = 0 \text{ for } x = p \text{ and } x = 1 \quad (6)$$

$$D < 0 \text{ for } p < x < 1 \text{ if } p < 1; D > 0 \text{ for all } x < 1, \text{ if } p > 1$$

Thus the model has the following implications:

If $p > 1$, $E = 1$, where E denotes the equilibrium for n/N . Here, opportunism pays everywhere, and the equilibrium lies at 100 % opportunism. This occurs for low effectiveness of monitoring (α), low rewards of opportunism (d) and low penalty on loss of reputation (r). If $p < 1$, then there is a region where $D < 0$: between p and 1. This occurs at higher levels of α , d and r . There are two equilibrium levels of opportunism: at p and at 1, but the latter equilibrium is unstable: a single cooperative agent will set a movement going towards the stable equilibrium p . Thus we have $E = p$. From (3) we find:

² To do that, we could adjust (1) by excluding from consideration by a cooperative agent those potential partners who in the past were caught for opportunism.

$$CR^* = \text{Max}[0, a-1/\alpha\{1+\ln(1+d/r)\}] \text{ if } p < 1 \text{ (so that } E=p\text{)}$$

$$CR^* = \text{Max}[0, a-1/\alpha(1+\ln\alpha d) \text{ if } p > 1 \text{ (so that } E=1\text{)} \quad (7)$$

From (5) it further follows that:

$$dD/dx = r\{-p/(x^2) + 1\}; = 0 \text{ for } x=\sqrt{p}; = 1-p \text{ for } x=1; \quad (8)$$

$$d^2D/dx^2 = 2rp/(x^3) > 0 \text{ for all } x$$

Therefore, if $p < 1$, the minimum reward for opportunism lies at $x = \sqrt{p}$.

4 Cases

A number of cases for both $p>1$ and $p<1$ are presented in table 1.

Table 1: cases

case	a	θ	d	r	d*	β	p*	p	E	figure
1	1	1	0.5		0	β	2		1	2a
2	1	1	1		0	β	1		1	2b
3	1	2	2	2	0	β	1/4	1/2	1/2	3a
4	1	2	1	2	0	β	1/2	3/4	3/4	3b

The outcomes are illustrated in figures 2 and 3, according to the method for representing problems of defection in multi-person games introduced by Schelling (1978).

figures 2 and 3 about here

While the overall results are in agreement with intuition, one paradoxical outcome is that when we *decrease* the potential reward for opportunism (d), p increases (see (5)), and hence the equilibrium level of opportunism *increases*. The explanation is

that then there is less pressure for monitoring, so that the expected penalty for opportunism declines.

From (5) it further follows that:

$$\begin{aligned} \text{Lim } p &= p^* = 1/(\alpha d) \\ r &\rightarrow \infty \end{aligned} \tag{9}$$

This means that even if the penalty for loss of reputation goes to infinity, there still is a non-zero equilibrium level of opportunism. This suggests that ***opportunism will not go away, even under extreme pressure of reputation***. Even at such an extreme pressure, there will still be 100% opportunism when the bonus of opportunism multiplied by effectiveness of monitoring (αd) is less than unity. Opportunism will go away only when monitoring becomes free and perfect ($\alpha \rightarrow \infty$).

5 Guilt

We consider a first option for modelling a trust-based society, with institutional or ethical restrictions of opportunism. Suppose that instead of a reputation mechanism, which is subject to imperfect and costly policing, we have ethically inspired feelings of guilt as an automatic, internally generated penalty on opportunism. Both the reward of opportunism and guilt only arise when opportunism is exercised against a partner who is not opportunistic: you don't obtain the advantage of opportunism and you don't feel guilty if your partner is as opportunistic as you are yourself. But while the reward is also conditional on an escape from the monitoring system, guilt follows automatically. This is equivalent to the previous model with a reputation mechanism that is perfect and costless. We still have monitoring for damage control because while guilt is automatic, it may not be sufficient to stand up against every temptation of opportunism. Then we have, instead of (4):

$$D = RO - RC = \{d(1 - m) - r\}(1 - n/N) \tag{10}$$

where r now denotes a penalty of guilt

Clearly, if the penalty of guilt (r) exceeds the potential gain of opportunism ($r > d$) there will be no opportunism. When guilt is weaker, and opportunism does not go

away until guilt matches the *expected* reward of opportunism ($r > d(1-m)$), taking into account the chance of being caught out in the monitoring system, we find, instead of (5)³:

$$D = r\{p/x + x - (1+p)\} \quad (11)$$

where: $p = 1/(\alpha r)$

As before, monitoring does not start until $n/N = p^* = 1/(\alpha d)$. Now we have an equilibrium of less than 100% opportunism when $x = n/N = p = 1/(\alpha r) < 1$, and then that point is the equilibrium. Note that $p > p^*$, since by assumption $r < d$, so that in the equilibrium monitoring occurs. Interestingly, as long as $d > r$, the equilibrium does not depend on the size of the reward of opportunism (d); only on the size of guilt (r). Opportunism will go away only if morality is stronger than the potential reward for opportunism ($r > d$), or monitoring to block the fruits of opportunism is free and perfect ($\alpha \rightarrow \infty$).

6 Limited temptation

There are other options for modelling a trust-based society. Consider a society with a morality which keeps people from opportunism until its expected rewards exceed some tolerance limit d^* ('a golden opportunity'). Again, we assume that opportunism yields a gain only against a non-opportunistic partner. Also, since again morality is not absolute, there is an option to set up monitoring for damage control and a reputation mechanism. To keep things simple, let us assume that the tolerance of trustworthiness applies equally to all members of the population, as a part of their shared culture. Now if the potential reward of opportunism is below the tolerance level ($d < d^*$), then no-one will be opportunistic, there is no need for monitoring, and all agents will receive the maximum return of full cooperation (a). Opportunism will

³ We assumed: $D = \{d(1 - m) - r\}(1 - n/N)$ which on the basis of (3) yields: $D = r\{N/(n.\alpha.d) - 1\}(1 - n/N) = r\{p^*/x + x - (1 + p^*)\}$

emerge when $d > d^*$. Opportunism increases until its expected incremental reward no longer exceeds d^* . This is illustrated in figure 4.

7 Robust trust?

The simplest model of a trust-based society is the one where opportunism never occurs, either because morality is absolute, or because guilt exceeds the potential rewards of opportunism, or because the tolerance level of loyalty does. Then the outcome is optimal: all members of the society (the 'insiders') receive the rewards of full cooperation (a), without any loss of reputation and without any cost of monitoring. But how robust is such a society under the entry of potential opportunists from outside? The simplest solution would of course be to exclude the outsiders from entering. But then the insiders may be punished by exclusion from world trade: if they do not admit outsiders, they will not be admitted to outside markets. If for that reason entry has to be allowed, will the absence of opportunism survive? And if it does, will the outcome still be better than if everyone were opportunistic?

Suppose that insiders remain steadfast in their non-opportunism. In the same way that we obtained the previous results, the expected reward of cooperation then is (instead of (1)):

$$CR = a + w - d(1-m)k/(N+K) - c \quad (12)$$

where: K = number of outsiders; k = number of opportunistic outsiders;

N = number of insiders

w = reward of being admitted to world trade, under condition of unrestricted entry to the home market

For the optimal level of monitoring we find (instead of (3)):

$$m^* = 1 - (N+K)/(k\alpha d) \quad (13)$$

$$c^* = \text{Max}\{0, 1/\alpha[\ln\{k/(N+K)\} + \ln\alpha d]\}$$

$$CR^* = \text{Max}\{0, a+w-1/\alpha[1+\ln\{k/(N+K)\}+\ln\alpha d]\}$$

The expected additional reward of opportunism is:

$$D = OR - CR = \{d(1 - m) - rm\} \{1 - k/(N+K)\} \quad (14)$$

with (13) this yields:

$$D^* = r\{p/y + y - (1+p)\} \quad (15)$$

where: $y = k/(N+K)$

So that the number of opportunistic outsiders (k) as a percentage of the total number of players ($N+K$) increases until an equilibrium is reached at:

$$E = 1/(\alpha r) + 1/(\alpha d) \text{ if } p < 1 \quad (16)$$

$$E = 1 \text{ if } p > 1$$

At this equilibrium we find from (13):

$$CR^* = a + w - 1/\alpha\{1 + \ln(1+d/r)\} \text{ if } p < 1 \quad (17)$$

$$CR^* = a + w - 1/\alpha(1 + \ln \alpha d) \text{ if } p > 1$$

Now this outcome for cooperating insiders is better than the outcome of cooperation without the admission of potentially opportunistic outsiders (a) if the reward of access to world trade satisfies:

$$w > 1/\alpha\{1 + \ln(1+d/r)\} \text{ if } p < 1 \quad (18)$$

$$w > 1/\alpha(1 + \ln \alpha d) \text{ if } p > 1$$

But we would have the same outcome when the insiders would allow entry to outsiders *and* themselves would become just as prone to opportunism as the outsiders; in other words, if they were to drop their ethic of non-opportunism. The only difference would be that some opportunistic insiders would take the place of some opportunistic outsiders. Thus when participation in world trade requires allowance of entry of potentially opportunistic outsiders, there no longer is any benefit in maintaining the inside ethic of non-opportunism: the insiders might as well become calculatively opportunistic. So either world trade is of limited value, so that a culture with an inside ethic of non-opportunism can afford to close itself off, or opportunism spreads across the world once it starts anywhere.

7 Conclusion

A number of results from the analysis conform to intuition, but there are some surprises. When we assume that the reputation mechanism is not automatic and

requires imperfect and costly monitoring, opportunism does not go away even if the penalty for a bad reputation is infinite. Surprisingly, a decrease of the potential reward for opportunism yields an increase of the equilibrium level of opportunism. The reason is that it lowers the optimal level of monitoring. When we assume that there is an automatic (selfimposed) penalty of guilt on opportunism, or the reputation mechanism is automatic and costless, but damage control still requires costly and imperfect monitoring, then opportunism will go away when its potential reward is less than the penalty of guilt. Opportunism also goes away more easily if there is a morality which keeps people from opportunism until its expected reward exceeds some tolerance limit. The best result is obtained when there is no opportunism at all, either because lack of opportunism is absolute, or because guilt exceeds the potential reward of opportunism, or because the reward is less than the tolerance limit of non-opportunism. Here the argument of Hill (1990) and Fukuyama (1996) seems to apply: societies with high, socially inculcated trustworthiness enjoy superior returns. But there is a catch. If in order to protect its ethic of non-opportunism the trust-based society blocks entry of potentially opportunistic agents from outside, it may be barred from world trade. The benefit of world trade can be sufficiently high to elicit allowance of the entry of potentially opportunistic outsiders. But then maintaining the ethic of non-opportunism yields a worse result than going along with the calculated opportunism of the outsiders. In that sense, calculated opportunism drives out non-opportunism.

Fukuyama (1996) argued that Japan economizes on governance and enables high-value relations on the basis of higher levels of trust, and that this is part of its competitive success on world markets. In Chinese and Korean cultures trust is narrowly limited to families, but in Japan it applies more widely. The much maligned closure of its markets by Japan can perhaps be interpreted as a necessary protection of a trustful society from the inroads of opportunism. Currently, firms face high costs of exit from established cooperative relations in Keiretsu's (Fukuyama, 1996: 176), and this explains why the Japanese cling to their closed groups so tenaciously. But entry may be forced on the penalty of retaliatory

exclusion from world markets, and firms are then forced to disengage from Keiretsu and engage in less trustful cooperation with outsiders. Our analysis would yield the prediction that the social capital that forms the basis for trust will then erode, since if one admits calculatively opportunistic outsiders, one suffers from maintaining one's ethic of non-opportunism, and opportunistic outsiders obtain an advantage.

Of course, this provides no reason not to try and create conditions for building trust in any particular relation. It can greatly reduce transaction costs, yield more fruitful cooperation and maintain greater flexibility for developing the relation. But in the absence of a widely shared ethical infrastructure of trust such building of trustful relations will be more time-consuming and costly.

In further research, one might develop a more refined analysis by means of a simulation model. This might simulate transactional encounters, choices of strategy (cooperation or opportunism), the chance that opportunism is found out and its advantage blocked, the reputation mechanism, possible switches of partners, preferably to partners with a good reputation, and adaptations of strategy choice on the basis of observed success.

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